

WHAT IS CLAIMED IS:

1 1. A liquid supplying member, for supplying liquid from a liquid container
2 to a liquid ejection head which are provided in a liquid ejection apparatus, the
3 liquid supplying member comprising:

4 an elastic member, elongated in a first direction so as to have a first
5 face and a second face; and

6 a film member, joined to the first face and the second face such that a
7 passage, through which the liquid is supplied from the liquid container to the
8 liquid ejection head, extending in the first direction is hermetically defined by
9 an inner face of the film member and the elastic member.

1 2. The liquid supplying member as set forth in claim 1, wherein the
2 elastic member is formed with a recessed portion such that a width of the
3 passage is enlarged thereat.

1 3. The liquid supplying member as set forth in claim 1, wherein the film
2 member comprises an inner layer having a first permeability for gas and water,
3 and an outer layer having a second permeability for gas and water which is
4 less than the first permeability.

1 4. The liquid supplying member as set forth in claim 1, wherein the
2 elastic member is comprised of elastomer.

1 5. The liquid supplying member as set forth in claim 1, wherein the film
2 member is heat welded to the elastic member.

1 6. The liquid supplying member as set forth in claim 1, wherein a
2 connector having a higher rigidity than the elastic member, and having an
3 opening communicated with the passage is provided at each end of the elastic
4 member.

1 7. The liquid supplying member as set forth in claim 1, wherein the film
2 member has flexibility.

1 8. A liquid supplying member, for supplying liquid from a liquid container
2 to a liquid ejection head which are provided in a liquid ejection apparatus, the
3 liquid supplying member comprising:

4 a plurality of elastic members, each of which is elongated in a first
5 direction so as to have a first face and a second face, the elastic members
6 being arrayed in a second direction perpendicular to the first direction;

7 a first film member, joined to the first face of each of the elastic
8 members; and

9 a second film member, joined to the second face of each of the elastic
10 members, such that a passage, through which the liquid is supplied from the
11 liquid container to the liquid ejection head, extending in the first direction is
12 hermetically defined between the adjacent elastic members by inner faces of
13 the first film member and the second film member.

1 9. The liquid supplying member as set forth in claim 8, wherein at least
2 one of the elastic members is formed with a recessed portion such that a width
3 of the passage is enlarged thereat.

1 10. The liquid supplying member as set forth in claim 8, wherein each of
2 the first film member and the second film member comprises an inner layer
3 having a first permeability for gas and water, and an outer layer having a
4 second permeability for gas and water which is less than the first permeability.

1 11. The liquid supplying member as set forth in claim 8, wherein each of
2 the elastic members is comprised of elastomer.

1 12. The liquid supplying member as set forth in claim 8, wherein each of
2 the first film member and the second film member is heat welded to the elastic
3 members.

1 13. The liquid supplying member as set forth in claim 8, wherein a
2 connector having a higher rigidity than the elastic members, and having an
3 opening communicated with the passage is provided at each end of the elastic
4 members.

1 14. The liquid supplying member as set forth in claim 8, wherein each of
2 the first film member and the second film member has flexibility.

- 1 15. A liquid supplying member, for supplying liquid from a liquid container
2 to a liquid ejection head which are provided in a liquid ejection apparatus, the
3 liquid supplying member comprising:
4 a flexible base member, having a first face in which a plurality of first
5 grooves are arrayed in a first direction; and
6 a first flexible plate member, joined to the first face of the base
7 member so as to seal the first grooves to form liquid supplying passages,
8 through which the liquid is supplied from the liquid container to the liquid
9 ejection head.
- 1 16. The liquid supplying member as set forth in claim 15, wherein each of
2 the first grooves is formed with a through hole extending to a second face of
3 the base member which is opposite to the first face.
- 1 17. The liquid supplying member as set forth in claim 15, wherein the
2 base member is comprised of thermoplastic elastomer.
- 1 18. The liquid supplying member as set forth in claim 17, wherein:
2 the thermoplastic elastomer is comprised of polypropylene; and
3 the first plate member comprises a first layer which is joined to the
4 first face of the base member and comprised of at least one of polypropylene
5 and polyethylene.
- 1 19. The liquid supplying member as set forth in claim 18, wherein the first
2 plate member comprises a second layer comprised of metal.

1 20. The liquid supplying member as set forth in claim 19, wherein the first
2 plate member comprises a third layer comprised of polyamide and a fourth
3 layer comprised of polyethylene terephthalate, between which the second layer
4 is sandwiched.

1 21. The liquid supplying member as set forth in claim 16, further
2 comprising a second flexible plate member which is joined to a part of the
3 second face and comprised of a metal layer.

1 22. The liquid supplying member as set forth in claim 15, wherein:
2 the liquid supplying member comprises a first portion to be flexed and
3 a second portion not to be flexed; and
4 the first portion has a first thickness and the second portion has a
5 second thickness thicker than the first thickness.

1 23. The liquid supplying member as set forth in claim 15, wherein:
2 the liquid supplying member comprises a first portion to be flexed and
3 a second portion not to be flexed; and
4 a portion of the base member corresponding to at least the first
5 portion has a cross section curved in a direction that the liquid supplying
6 member is to be flexed.

1 24. The liquid supplying member as set forth in claim 16, wherein:
2 the second face of the base member is formed with a plurality of

3 second grooves arrayed in the first direction and sealed by a second flexible
4 plate member.

1 25. The liquid supplying member as set forth in claim 24, wherein each
2 one of the first grooves is communicated with associated one of the second
3 grooves.

1 26. The liquid supplying member as set forth in claim 24, wherein each of
2 the second grooves is formed with a through hole extending to the first face.

1 27. The liquid supplying member as set forth in claim 15, further
2 comprising a connector having a higher rigidity than the base member and
3 communicating the first grooves and the liquid ejection head.

1 28. The liquid supplying member as set forth in claim 15, wherein a
2 cross-sectional area of each of the first grooves is partly changed.

1 29. The liquid supplying member as set forth in claim 15, wherein the
2 base member is curved such that both longitudinal ends are opposed to each
3 other in the vicinity of a longitudinal center portion thereof, in an original state.

1 30. A method of manufacturing a liquid supplying member for supplying
2 liquid from a liquid container to a liquid ejection head provided in a liquid
3 ejection apparatus, the method comprising steps of:

4 providing a mold for forming a base member having a first face in

5 which a plurality of first grooves are arrayed in a first direction;
6 injecting molten thermoplastic elastomer into the mold to form the
7 base member having a flexibility; and
8 joining a flexible plate member to the first face of the base member so
9 as to seal the first grooves to form liquid supplying passages.

1 31. The manufacturing method as set forth in claim 30, wherein:
2 the mold is configured such that the base member is curved such that
3 both longitudinal ends are opposed to each other in the vicinity of a
4 longitudinal center portion thereof; and
5 the thermoplastic elastomer is injected from portions of the mold
6 corresponding to the both longitudinal ends and the longitudinal center portion.

1 32. A liquid ejection apparatus in which the liquid supplying member as
2 set forth in claim 1 is extended from the liquid container to the liquid ejection
3 head.

1 33. The liquid ejection apparatus as set forth in claim 32, wherein:
2 the elastic member is formed with a recessed portion such that a
3 width of the passage is enlarged thereat; and
4 the recessed portion is situated closer to the liquid ejection head than
5 the liquid container.

1 34. A liquid ejection apparatus in which the liquid supplying member as
2 set forth in claim 8 is extended from the liquid container to the liquid ejection

3 head.

1 35. The liquid ejection apparatus as set forth in claim 34, wherein the
2 liquid supplying member is flexed such that either the first film member or the
3 second film member faces inwards.

1 36. The liquid ejection apparatus as set forth in claim 34, wherein:
2 the elastic member is formed with a recessed portion such that a
3 width of the passage is enlarged thereat; and
4 the recessed portion is situated closer to the liquid ejection head than
5 the liquid container.

1 37. A liquid ejection apparatus in which the liquid supplying member as
2 set forth in claim 15 is extended from the liquid container to the liquid ejection
3 head.

1 38. The liquid ejection apparatus as set forth in claim 37, wherein the
2 liquid supplying member is flexed such that either the base member or the first
3 plate member having a higher elasticity than the other faces inwards.